Co-Operative Inquiry as a basis for Evaluation of Knowledge Management Tools

Conference or Workshop Item

Co-Operative Inquiry As A Basis For Evaluation Of KM Tools

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This paper highlights the changes needed in the practice of IT evaluation when directed towards IT used to support knowledge management. The paper addresses the need for evaluation to recognise the increased emphasis on IT supporting the work of communities of practice in contrast to simply automating organisational processes. A framework that uses a form of action research (co-operative inquiry) is suggested that attempts to widen participation within the evaluation process and to enrich the purpose to which evaluation is put, especially in regard to the IS practitioner and IS users.

1 Introduction

In the conventional systems development lifecycle for information systems (IS), evaluation is often placed as a distinct stage. By placing evaluation at the start or end of the cycle, it is hoped that learning about the developed system can be gathered before the project is given its go-ahead or to inform future projects. It may also lead to further development of the system. For IS projects with requirements that have easily defined requirements then this is an appropriate sequence.

For IS that have less easily defined requirements then it is questionable whether this approach to evaluation is satisfactory. For IS that is required to support knowledge management (KM), the problem of defining systems requirements is problematic. Much of the fuzziness of the requirement specification for KM oriented IS, is rooted in the need to support the organisational routines developed within communities of practice (Brown and Duguid 1991). Indeed these routines may evolve as a result of use of the IS, as the communities develops ways of making use of the technology.

Many information and communication technologies (ICT) are now directed at supporting KM in organisations. Many companies are supplying “solutions” for KM, though the emphasis is mostly on how explicit knowledge can be captured stored and distributed. The problem of how tacit knowledge is managed is often ignored.

This paper is concerned with the way in which evaluation of IS occurs when developing technologies to support a community of practice’s knowledge management. In particular that evaluation should be seen as an ongoing process that should promote a dialogue between developer and user. An action research framework based on co-operative inquiry is suggested to support an on going evaluation of how communities reflect on their use of ICT to manage knowledge. This framework is used on the assumption that the transfer of tacit knowledge is difficult in the extreme and most probably impossible. This makes the use of ICT for capture, storage and distribution of knowledge a “holy grail”.

It is hoped that the framework informs a more systemic approach to developing knowledge in communities. Co-operative inquiry as a form of participative action research is suggested, as it provides a basis for utilising learning at both individual and group levels. The proposal leads to a question about the worth of current IT evaluation practice and the notion of IS professionalism it is linked to.

2 What is the purpose of evaluation?

Evaluation is a much used word in the context of IS. As pointed out by Hirshheim and Smithson in (Bjørn-Andersen and Davis 1988) IS evaluation may take the form of specific stages in the development lifecycle or may be an ongoing process. It may also have different emphasis perhaps on technical or quantitative criteria such as measures of efficiency or may be more concerned with human and social issues drawing more on qualitative data.

A useful definition of IT evaluation is given by Farbey et al (Farbey, Land et al. 1999):

> *"A process, or group or parallel processes, which take place at different points in time or continuously, for searching and for making explicit, quantitatively or qualitatively, all the impact of an IT project and the programme and the strategy of which it is part."*

Serafeimidis and Smithson (Serafeimidis and Smithson 2000) summarise several writers providing seven roles of evaluation:

- Establishing the worth of IT to the organisation or its growth
- Ranking alternative IT projects
- Forming a central part of an incremental planning and control process
- Acting as an input to business and IT strategy formulation
- Acting as a feedback function to support organisational learning
- Provide a deeper understanding of the interaction between the technology and the underlying organisational processes, culture and politics

From this list the purpose of IT evaluation is shown to be wider than to assess whether a project is to go ahead or continue nor to check that the objectives of the project have been achieved during handover to the users.

This diversity of roles and also the IS that evaluation is focused on, suggest that a contingent approach to evaluation may be necessary. The type of objectives that evaluation has may well depend upon the type of IS, for example system performance measures are important to transaction processing systems, but measures of decision and organisational impact are important to decision support and information reporting systems viewed (Klein, Jiang et al. 1997). So linking the type of IS to the style of evaluation has much support. This has been shown for example in the relationship between portfolio analysis and information economics (Ward 1990).

Walsham also highlights the motive for evaluation. At one level evaluation is seen as a systematic process of comparing an IS project against a set of agreed criteria. He also suggests that the process of evaluation may be more an organisational ritual that serves to benefit certain stakeholders. This is mirrored by a study that concluded that many managers joined the “evaluation party” to gain political representation rather than to provide a particular set of knowledge or skills (Serafeimidis and Smithson 2000). For this reason the change towards a wider basis for how evaluation is to be done in an organisation needs to be treated as a change project in itself.

Walsham (Walsham 1993 p. 184) concludes that the process of IS evaluation is an ongoing and continuous process. He suggests that within this process there will be a mix of formal and informal activities making up the multi-stage process. Walsham suggest this process will benefit from a interpretative stand point though he does not give an precise guidelines on how this process is put into practice. In particular the nature of the evaluatory intervention.

3 Tools for evaluation

Within the process of IT evaluation there have been a number of different approaches and tools adopted. The initial assumption of these approaches was based on IT needing to improve efficiency, especially where used to automate processes. The natural assumption was that evaluation was based on financial measures. Typically IT projects would be evaluated in much the same way as any other piece of plant or machinery. Use of return on investment and net present value models of investment appraisal provided the central basis for this type of evaluation. It is likely that even today financial measures of performance have a significant impact on how IT is evaluated.

It has become clear that for IT many benefits are far more diverse than other types of technology. The impact of IT to be able to informate processes (Zuboff 1988) is one reason for why financial models are inadequate. The issue of how you place a value on improved knowledge of a customer or improval in how a customer experiences a service is particularly problematic. In assessing the drawbacks of IT, financial models may also be simplistic. Writers such as Walsham (Walsham 2001) highlight the issue of how social change may occur with the introduction of IT. In particular he highlights issues related to changes in professional identity and also the basis for group working. For these changes financial measures are very poor for providing a means of evaluation.

Recognising that evaluation must take on a wider perspective several interesting attempts have been made to provide wider frameworks. Parket et al (Parker, Benson et al. 1988) suggest the Information Economics framework that gives six categories in which value can be gained from IT:

- Return on Investment
- Strategic match
- Competitive advantage
- Management information support
- Competitors response
- Strategic IS architecture

Within Information Economics IT projects are assessed using a number of measures in five areas:

- Cost benefit analysis
- Value linking
- Value accelerating
- Value restructuring
- Innovation valuation

The basis for the evaluation is based on both objective and subjective evaluations. For example in the case of the value of the potential for the project to support innovation, evaluation is likely to rest on factors being ranked or rated.

A similar approach as been suggested by Ward (Ward 1990) with regard to the IS Portfolio. In this he links the position of applications in the portfolio to an emphasis on a specific area of Information Economics. The implication of this work for IT evaluation has been to raise the importance of differences in evaluation approach depending the type of IS.

Martinsons et al (Martinsons, Davison et al. 1999) suggest a modified use of the balanced Scorecard (BSC) approach (Kaplan and Norton 1996) that builds on that of Information

Economics. The balanced IS Scorecard widened the view of Information Economics that splits the evaluation of IS into two domains of business and technology. It uses four perspectives: user orientation, business value, internal processes and future readiness. Each of these perspectives is used to identify specific metrics for evaluation. These metrics may be based on short or long term objectives and may use objective or subjective measures. By assessing IT projects in this way a more holistic view of the potential benefits may be achieved.

Many of the above approaches provide frameworks for evaluating IT but it is unclear how the actual intervention of evaluation is to be done. Ward and Griffiths (Ward and Griffiths 1996) suggest an emphasis should be placed on Benefits Management. This provides a framework for first using evaluation to identify potential benefits from an IT project, identify people who are responsible for achieving the benefit and then to review whether the benefits are ever achieved. Though this framework stresses the role of people in "making the technology work", the basic assumptions about what and how IT is evaluated remain the same as for the above discussion.

4 The Problem with Evaluation

Farbey et al (Farbey, Land et al. 1999) summarises several writers in establishing the concerns about evaluation. The primary issue being the poor evaluation of costs, risks and benefits, the emphasis often being placed on tangible rather intangible factors. This leading to a skewed view of the IS in question. In particular many researchers found that the actual process of evaluation was either minimal or non-existent. A second issue was the narrow nature of much evaluation. Criticism was made that evaluations looked only at a single project rather than a wider programme of projects. The need for a more systemic evaluation of a project was highlighted. To address these concerns several prescriptions were listed. For this paper the following are of particular interest:

- a more holistic approach (Wolstenholme Eric, Henderson et al. 1993;)
- recognition of the role of evaluation in organisational learning
- appreciation of the wider purposes of evaluation, including its political and persuasive effects
- further exploration of softer methods for determining costs, benefits and risks (Symons and Walsham in (Veryard 1991); (Ward and Griffiths 1996))

Serafeimidis and Smithson (Serafeimidis and Smithson 2000) have much to say about the balance between a quantitative and qualitative approach to evaluation. They suggest that though much academic writing has flagged the need for interpretivist approaches to IT evaluation, few organisations have taken this aspect of evaluation up. A major barrier to the use of more qualitative approaches they suggest is the suspicion held be financial and senior managers, with only the balanced scorecard approach having much credence with this group. This was in contrast to research (Currie 1995) that found that 85.5% of managers believed that qualitative benefits are as important as the financial ones, with only 53% attempting to quantify them seemingly because of their vague nature.

IT evaluation is not alone in having to contend with a dilemma between quantitative and qualitative approaches. In the area of development studies Chambers (Chambers 1997 p.36) highlights the problems of dealing with paradigms concerned with "things" or "people". He links the paradigm for dealing with things to high status professional posts underpinned with

a specialist scientific approach. In contrast he suggests the paradigm for dealing with people has a lower professional status. Due to the less controllable nature of people the people oriented professions are more likely to be generalist. This distinction has meant that professions in attempting to gain respectability have placed greater emphasis on quantitative approaches. He cites sociologists and clinical psychologists as two examples of this. An important aspect of this shift towards quantification has been the need to the development of controlled and stable conditions. Chambers argues that this may be possible for the doctor, but in his own area of rural development, the context is anything but stable and controlled. This may be a similar situation for IT. The need to project a professional approach may lead IT developers into the adoption of predominantly objectively based methodologies. When it comes to evaluation the choice will be affected by the need to adopt a legitimate approach. Unfortunately this legitimacy is based on the frame of reference of the finance professions. Who for sound business reasons base their notion of validity on financial tests. Thus the 85.5% of managers who do feel that qualitative benefits are important are not provided with any externally valid evaluation processes.

The development studies literature provides an interesting parallel of the problems in development of IS. This picks up on many generic development studies issues (Chambers 1997), such as:

- Developing countries are not stable but are complex, diverse and dynamic.
- Problems of outsiders making decisions about how people in developing countries should live and work.
- The Western world has taken the stance as expert and hence carries the majority of power in the development relationship.
- Problems of cross-cultural transfer of technology
- Application of a one size fits all mentality to technology

For IS many of these problems also exist however on a more organisational scale. Business organisations are currently in a state of flux and like developing countries their existence is far from stable but complex, diverse and dynamic. Many IS systems are developed by outsiders, with little understanding of the culture and cultures within the organisation. For many of these outsiders the implementation of IS still rests on the use of the shelf solutions. For development studies the recent move has been towards to the development of more participative and also more contingency based approaches. Similarly a move in evaluation practice has been to encourage participation and to recognise the role of organisational learning in the evaluation process. This learning process may be half-hidden, benefiting and seen only by people within the context. The need for evaluation to recognise that partial views of an organisation's reality are the best that can be achieved. Evaluation must recognise this and must not pretend to have any privileged access to truth through the use of pseudo rational approaches.

IT evaluation can be viewed as a process of learning that will provide insights at several stages of the IS development lifecycle and over the course of several projects. This learning will have many uses such as the five learning themes (Farbey, Land et al. 1999). The first of these themes highlights that every IT project will require an appropriate evaluation approach, as such learning can be directed towards building a theory of evaluation that will guide the choice of suitable techniques. The second learning theme highlighted the need for a continual stream of learning about the role and perspectives of stakeholders. The third stream of learning concerns evaluation as part of a decision making process. For example learning on how evaluation can support decision making is still at a basic level. Building a more complex

model of evaluation in relation to decision making will allow questions as basic as whether to continue or a halt a project to be better informed. This is perhaps well illustrated in the account of the Stock Exchange Taurus project (Drummond 1996). The fourth theme seeks to highlight the need to understand how the evaluation needs of a project change through out the lifecycle. The final theme stresses the need to maintain management learning within and across projects. These themes provide a clear framework for moving towards an organisational learning approach to IT/IS evaluation. In relation to KM tools they also question how evaluation can contribute to the long-term success of implementation.

5 Knowledge Management and Its Tools

This paper is concerned with a relatively narrow area of IT evaluation. Much of the cited work on IT evaluation has concerned itself with areas such as transaction processing systems, decision support and strategic information systems. In many ways these have looked at IT from a very functionalist perspective. Thus IT has often been introduced under the assumption that its presence will lead to a unified approach to carrying out a particular process. This may be the case for a payroll system but it is much less plausible that providing a standard means for sharing knowledge will result in an automatic improvement in KM. The functionalist's assumption that organisational structures such as IS will directly influence the actions of people in the organisation may not stand up in this context.

In looking at KM tools, many functions of IT will be considered, the main imperative though is to consider how IT can support the use of intellectual capital in or across organisations. Intellectual capital being concerned with the knowledge possessed by an organisation (Roos 1997).

To evaluate the tools for KM that IT can provide a clear notion of what constitutes knowledge and how it can be managed is needed. Ackoff (Ackoff 1974) has provided a distinction between data information, knowledge and wisdom. More specifically Polanyi's distinction between tacit knowledge and explicit knowledge (Polanyi 1958) suggests that there is an aspect of knowledge that is unspeakable. Developed by Nonaka (Nonaka 1991) the economic value of tacit knowledge was emphasised, unfortunately the scope for transferring tacit knowledge between individuals is problematic. the process of serving apprenticeships being one example of how the tacit aspect of knowledge for the work of any profession from plumber to musician, being the only practical approach. Blackler (Blackler 1995) established five categories of knowledge:

- embodied
- embedded
- embrained
- encultured
- encoded

These provide a more detailed view than simply the tacit/explicit split. The distinction being made between embrained and encultured knowledge for example makes a distinction between individual and group knowledge.

Boisot's I-space model (Boisot 1998) further emphasises the problem of not only making knowledge explicit but also the process of diffusing it through the organisation. The work of Weick (Weick 1995) on sensemaking extends the notion of knowledge as being individually created. This idea is further developed in the area of 2nd order cybernetics where the very notion of information transfer is questioned and that systems (individuals, groups or

organisations) may well be organisationally closed and so the development of knowledge is a process of distinction making (Maturana and Varela 1992). The end point of these ideas being that knowledge is never replicated but always individually developed based on past experience.

To produce tools for managing knowledge will be by definition difficult when recognising the emphasis on individual construction of knowledge. This has not stopped IT suppliers having a go. For many so called IT based KM "solutions", the underpinning basis for KM is based on four areas of activity (Davenport, DeLong et al. 1998):

- To create knowledge repositories
- To improve knowledge access
- To enhance the knowledge environment
- To manage knowledge as an asset

For IT based KM tools the first two of these areas seems to have been the focus. Duffy (Duffy 2000) suggests a KM architecture has five distinct layers.

- user interface
- knowledge metamodel
- knowledge repository
- knowledge access tools
- KM enablers

This architecture clearly addresses the first two of Davenport's areas however the components that make up this architecture are technological and not specifically organisational. The assumption behind the architecture being that knowledge is independent of individuals and can be collected stored and redistributed. In evaluating the technology for KM then how can this be done from the perspective of individually constructed knowledge?

The tools that have been developed to support this architecture are varied and in many cases powerful and innovative. In addressing the problem of "how to do" KM they perhaps give users some useful tools. Offsey (Offsey 1997) lists a number of potential KM enabling technologies:

- intranets
- document management systems
- information retrieval systems
- relational and object databases
- electronic publishing systems
- groupware and workflow management systems
- push technologies and agents
- help-desk applications
- brainstorming applications
- data-warehousing and data mining tools

Junnarkar and Brown (Junnarkar and Brown 1997) highlight the need to bridge IS and human resources as part of a KM strategy and those groups need to be formed that explore how to implement new ways of working in conjunction with the new desktop technologies. This seems to be a crucial point, many organisations will see potential for use of these technologies but there will need to a process of mutual adjustment between the organisations and the technology (Leonard-Barton 1988). The purpose of the technology may be seen as fuzzy and uncertain. How it fits to the organisation or how the organisation fits to the

technology will be placed in a state of co-evolution (Walsham 2001 p.53). Technological frames (Orlikowski and Gash 1994) highlight the socially constructed nature of technology and more specifically information systems. Orlikowski and Gash indicate that it may be the misalignment between these technological frames held by developers and users of IS that contributes to the failure of some IS. This signals a potential task of evaluation to be as a means of facilitating this co-evolution.

Tsoukas (Tsoukas 1996) suggests that the task of management in relation to organisational knowledge is not to act as gatherers of knowledge but as facilitators in creating links between people so that knowledge can be used through co-ordinated action. This suggests that the emphasis of evaluation in relation to KM tools is to assess the extent to which technological tools support the KM in an organisation and to develop learning about how the co-ordinated action can best be achieved in the future. The idea of co-ordinated action is supported in the communities of practice literature (Brown and Duguid 1991). The emphasis of this literature is recognising the role of groups and their importance in developing knowledge. In many cases the work of groups does not even follow espoused practice and the "non-canonical practice" is often a key factor in determining organisational performance. KM then is not a process that can be easily prescribed and embedded in an information system. The need to value how groups develop their own approaches to developing knowledge in conjunction with ICT is a key challenge for IT evaluation.

So where does this match with the tradition of IT evaluation described earlier in the paper? For the developers of IS that uses KM tools it raises several questions. Can the benefits and risks of implementing KM tools be adequately assessed using a predominantly objective framework? Can people outside the communities of practice using the tools effectively evaluate these tools? Do the approaches to evaluation approaches place enough emphasis on using evaluation as a way of informing future use of the tools, through an organisational learning process?

6 A Co-operative Inquiry framework for IT evaluation

This paper is concerned with how a specific form of action research, co-operative inquiry, can be used for improving the process of IT evaluation. The previous discussion has identified several weaknesses in the process of IT evaluation highlighted in IS literature. Currently one challenge is how to evaluate the use of IT to support KM. As pointed out above, recognition of the individually constructed nature of knowledge implies that the role of IT in KM is not to automate. Evaluation processes must be developed that recognise the IT as a tool that supports the development of a community of practice.

Action research is a process of inquiry that recognises that the role of observer and participant are inextricably linked. It is of particular relevance to evaluation as it is also concerned with not only exploring a situation, but also improving situations. Eden and Huxham provided the following definition:

> *"Action research involves the researcher in working with member of an organisation over a matter which is of genuine concern to them and in which there is an intent by the organisation members to take action based upon the intervention." (Eden and Huxham in Clegg, Hardy et al. 1996 p. 527)*

As a framework for evaluation of KM tools action research seems particularly relevant. The concern that action research should be about researching a situation and improving it,

potentially unlocks evaluation from simply being a single stage in the IS development lifecycle. More importantly as KM tools are likely to be fuzzy in nature, evaluation has a role in aiding the co-evolution between the users and the KM technology.

Most action research is based on cycles of inquiry, for example Kolb's learning cycle (Kolb 1984). Different forms of action research then have different emphasis on type of research method used, role of researchers and role of other people in the context being explored. Co-operative inquiry ((Heron 1996), (Reason 1994)) is a distinct form of action research that frames the role of all people involved as co-researchers. As a form of inquiry it was developed to help professionals to reflect on their own practice and develop ways of improving their own practice. Originally much use of co-operative inquiry was in health care settings. More recently though there has been interest in how it could be transferred to more technological contexts such requirements engineering (Alexander 1999). Reason (Reason and Bradbury 2000 p. 180) suggests the following framework for a co-operative inquiry based on a series of action research cycles:

- Form a group of co-researchers and agree a focus of the inquiry. Develop a set of procedures for gathering and recording data from the inquiry.
- Each member of the inquiry group engages in the process of inquiry using the agreed procedures
- Develop a deep experiential engagement with the context of the inquiry
- After an agreed period reassemble the group to share experiences.

These four stages are cycles several times (perhaps 6-8 times) over a period of time ranging from hours to several months. Though on the face this may a simple framework Reason stresses the need for careful initiation of the group and the inquiry skills needed for the ongoing process.

An important feature of co-operative inquiry is that the inquiry is owned and operated by people in the context. Outsiders may be involved and have a role such as facilitator or some other resource but all people in the inquiry have an equal status as co-researcher. This is perhaps in contrast to many examples of IT evaluation where commonly a small group of people, possibly remote from the actual users will own the process of evaluation. Co-operative inquiry stresses the need to invite people in and allow multiple views of just what are the issues of interest to included. Again this is in contrast to typical IT evaluation where often "outsiders" such as accountants or senior managers set the indicators of performance.

A feature of co-operative inquiry is the use of an extended epistemology (Heron 1996). This stresses the need to recognise that there are several territories of knowing that are related together. By focusing on only one territory then it is inevitable that only a partial view of the situation will be gained. The four territories are:

- experiential knowing
- presentational knowing
- propositional knowing
- practical knowing

For a KM tool these four territories widen the basis for viewing its use and ultimate effectiveness. Experiential knowing results from the act of experiencing it is perhaps the most difficult to territory from which any form of explicit knowledge can be gained. Presentational knowing results from the early expression of knowledge gained through experience it may take some symbolic form such as a story, picture or other expression. Propositional knowing is the explicit articulation of knowledge and takes a form that is most easily communicated.

Practical knowing represents the internalisation of propositional knowledge so that it may be used in real situations. These four territories of knowing are significant for two reasons. First in evaluating a KM tool then relying only on access to propositional knowing is likely to provide only a partial view of the technology. Only by valuing all forms of knowing will a more complete view be gained. Secondly the evaluation of the tool should address how the tool supports KM in all four forms of knowing.

Co-operative inquiry places emphasis on establishing for whom the inquiry is being done. It brings into the open that the motives for inquiry will be at the level of the individual, the group involved in the inquiry and wider stakeholders in the context. This is in contrast to IT evaluation that is often seen as controlled and owned by specific groups such as senior management, IT departments etc. At the very least this provides a way of confronting some of the political pressures on IT evaluation. This perhaps addressees the issues of who is the evaluation for and links with the ideas of responsive evaluation (Guba and Lincoln in Walsham 1993 p.166) and fourth generation evaluation (Walsham 1993 p. 168).

So what does co-operative inquiry bring to IT evaluation of KM tools. First of all co-operative inquiry is a process that can carry on indefinitely, possible over the course of several projects. This ameliorates the problem of evaluation being constrained to a single stage of IS development lifecycle or a single project. Secondly co-operative inquiry values and promotes the participation of users in evaluation of IT. Thirdly the extended epistemology provides a distinct change in focus for IT evaluation from being concerned with purely financial measures of performance. The extended epistemology does not exclude the use of objective financial measures of performance, but through the use of subjective forms of knowledge, a more complete view of how a project contributes to the development of a community of practice can be gained. The fourth point is that co-operative inquiry provides a clear framework for how the IT evaluation many be treated as an intervention in the organisation. By providing guidelines for both the process and issues such as ethical considerations, IT evaluation may be viewed more completely as an intervention in the work of the organisation. This aspect has been missing from many accounts of how IT evaluation should be done. Finally the more holistic view of knowledge development should act as a means of drawing together both technical and organisational aspects of the KM process and the role of ICT in supporting it.

7 Conclusions

This paper has provided a brief overview of some recent literature concerning IT evaluation to illustrate some of the shortcomings and challenges for the area. In particular the dependence on financial measures of performance and other quantitative approaches were shown to be weaknesses in promoting a effective approach to evaluation. It was also highlighted that IT evaluation is often seen as a process to be carried through rather than more systemically as an intervention into the affairs of the organisation. As such opportunities for promoting learning about the use of IT in the past, present and future were missed. Finally a distinction about the nature of KM tools from other types of IS was made. This stressed the role of IT in facilitating KM rather than the simply automating. Particularly in the sense that knowledge is developed through individual constructions.

The use of a co-operative inquiry framework was then suggested that addressed several deficiencies in current approaches to IT evaluation. Especially in terms of improving levels of participation and development of a learning environment for IS.

This paper has presented a discussion of possible changes to the practice of IT evaluation particularly with respect to KM tools. One aspect of the discussion has been underplayed and that is the financial case for employing a co-operative approach. First of all co-operative inquiry is a process with its strength being its uncertainty. Secondly its purpose is not to find answers to known questions but to identify questions as well as answers. In attempting to sell the approach to business both these issues need to be addressed. Businesses are hesitant in following processes for which the "deliverable" is unclear, especially the notion of a process that looks for the question rather than taking it as given. The openness of the process also means that it may not fit into any conventional consultancy approach. Consultants can usually guarantee the delivery of something, even if it is just a report! The issue of how IT/IS professionals approach the process of evaluation then needs to be reviewed. Does the adoption of a pseudo rational approach such as cost-benefit analysis, truly allow proper evaluation to take place or is this simply a sign of the lack of confidence in the profession. For the IT industry the rate of failure is still not falling, while the human complexity of KM tools is an order of magnitude greater, evaluation practice needs to break from its past to meet the challenge.

Acknowledgements

Thankyou to Dr Simon Bell for his comments on the draft of this paper.

Ackoff, R. L. (1974). Redesigning the future: a systems approach to societal problems. New York,, Wiley.

Alexander, I. (1999). "Migrating towards co-operative requirements engineering." Computing & Control Engineering Journal **10**(1): 17-22.

Bjørn-Andersen, N. and G. B. Davis (1988). Information systems assessment : issues and challenges : proceedings of the IFIP WG 8.2 Working Conference on Information Systems Assessment, Noordwijkerhout, The Netherlands, 27-29 August 1986. Amsterdam ; New York

New York, N.Y., U.S.A., North-Holland ;

Sole distributors for the U.S.A. and Canada Elsevier Science Pub. Co.

Blackler, F. (1995). "Knowledge, knowledge work and organizations: An overview and interpretation." Organization Studies **16**(6): 1021-1046.

Boisot, M. H. (1998). Knowledge assets: Securing competitive advantage in the information economy, Oxford University Press.

Brown, J. S. and P. Duguid (1991). "Organzational learning and communities-of-practice: towards a unified view of working, learning and innovation." Organization Science **2**(1).

Chambers, R. (1997). Whose reality counts? : putting the first last. London, Intermediate Technology Publications.

Clegg, S., C. Hardy, et al. (1996). Handbook of organization studies. London ; Thousand Oaks, Sage Publications.

Currie, W. (1995). Management strategy for IT : an international perspective. London, Financial Times/Pitman.

Davenport, T., D. DeLong, et al. (1998). "Successful knowledge management projects." Sloan Management Review **39**(2): 43-57.

Drummond, H. (1996). Escalation in Decision Making, Oxford University Press.

Duffy, J. (2000). "The KM Technology Infrastructure." The Information Management Journal: 62-66.

Farbey, B., F. Land, et al. (1999). "Moving IS evaluation forward: learning themes and research issues." Journal of Strategic Information Systems **8**(2): 189-207.

Heron, J. (1996). Co-operative Inquiry: Research into the Human Condition, Sage.

Junnarkar, B. and C. Brown (1997). "Re-assessing the enabling role of information technology in KM." Journal of Knowledge Management **1**(2): 142-148.

Kaplan, R. S. and D. P. Norton (1996). "Using the balanced scorecard as a strategic management system." Harvard Business Review **74**(1): 75-&.

Klein, G., J. J. Jiang, et al. (1997). "Information system evaluation by system typology." Journal of Systems and Software **37**(3): 181-186.

Kolb, D. A. (1984). Experiential learning : experience as the source of learning and development. Englewood Cliffs, N.J. ; London, Prentice-Hall.

Leonard-Barton, D. (1988). "Implementation as mutual adaption of technology and organisation." Research Policy **17**(5): 251-267.

Martinsons, M., R. Davison, et al. (1999). "The balanced scorecard: a foundation for the strategic management of information systems." Decision Support Systems **25**(1): 71-88.

Maturana, H. and F. Varela (1992). The tree of knowledge, Biological roots of human understanding, Shambhala.

Nonaka, I. (1991). "The Knowledge Creating Company." Harvard Business Review **0**(0): 96-104.

Offsey, S. (1997). "Knowledge management: linking people to knowledge for bottom line results." Journal of Knowledge Management 1(2): 113-122.

Orlikowski, W. J. and D. C. Gash (1994). "Technological Frames - Making Sense of Information Technology in Organizations." Acm Transactions on Information Systems **12**(2): 174-207.

Parker, M. M., R. J. Benson, et al. (1988). Information economics : linking business performance to information technology. Englewood Cliffs, N.J., Prentice Hall.

Polanyi, M. (1958). Personal knowledge: Towards a post-critical philosophy, Routledge.

Reason, P. (1994). Participation in human inquiry. London ; Thousand Oaks, Calif., Sage Publications.

Reason, P. and H. Bradbury, Eds. (2000). Handbook of Action Research: Participative inquiry and practice, Sage.

Roos, J. (1997). Intellectual capital : navigating in the new business landscape. Houndmills, Basingstoke, Hampshire, Macmillan Business.

Serafeimidis, V. and S. Smithson (2000). "Information systems evaluation in practice: a case study of organizational change." Journal of Information Technology **15**(2): 93-105.

Tsoukas, H. (1996). "The firm as a distributed knowledge system: A constructionist approach." Strategic Management Journal **17**: 11-25.

Veryard, R. (1991). The economics of information systems and software. London, Butterworth-Heinemann.

Walsham, G. (1993). Interpreting information systems in organizations. Chichester, West Sussex, England ; New York, Wiley.

Walsham, G. (2001). Making a world of difference : IT in a global context. Chichester, Wiley.

Ward, J. (1990). "A portfolio approach to evaluating information systems investments and setting priorities." Journal of Information Technology **5**: 222-231.

Ward, J. and P. M. Griffiths (1996). Strategic planning for information systems. Chichester ; New York, Wiley.

Weick, K. E. (1995). Sensemaking in organisations, Sage.

Wolstenholme Eric, F., S. Henderson, et al. (1993). The evaluation of management information systems : a dynamic and holistic approach. Chichester, J. Wiley.

Zuboff, S. (1988). In the age of the smart machine : the future of work and power. New York, Heinemann Professional.